

REMARKS

Claims 1-16, 19-21, and 23-30 are pending in the application and are at issue.

Applicants noticed a discrepancy in the Office Action in that page 2 of the Action indicated that the rejection was final, whereas page 5 of the Action indicated that the action was non-final. Applicants' undersigned attorney telephoned Examiner Nutter on March 7, 2007, and was informed by Examiner Nutter that the designation of a final rejection was erroneous, and that this response would be considered as a response to a non-final action with finality being removed because of inadvertent error. Applicants gratefully acknowledge the examiner's confirmation that the present action is non-final.

The present claims are directed to an ester compound, process of preparing the ester, a crosslinked hydrogel using the ester, a polymer and process of preparing the same, a composition containing the ester compound, and articles containing the crosslinked hydrogel. The ester compound is a tri(meth)acrylate of an alkoxyLATED trimethylolpropane. Independent ester claim 1 *clearly* recites tri(meth)acrylate compounds I, wherein the trimethylolpropane is alkoxyLATED in a *specific* blockwise fashion, i.e., first propoxylated, then ethoxylated. A (meth)acrylic acid unit then is positioned at each of the three terminal ends of the alkoxyLATED trimethylolpropane. Compound I can be prepared, for example, by a process utilizing a *molar excess* of (meth)acrylic acid to insure that all terminal hydroxyl groups are reacted (e.g., claims 7 and 12), wherein the molar excess of (meth)acrylic acid is specifically recited. In addition, the molar excess of (meth)acrylic acid does not have to be removed from the reaction mixture (e.g., claims 8 and 9).

The claimed esters are hydrophilic having 14 to 16 total moles of ethylene oxide (i.e., EO) ($n_1 + n_2 + n_3$) and only 4 to 6 total moles of propylene oxide (i.e., PO) ($m_1 + m_2 + m_3$) (see claim 1). The maximum number of total moles of alkoxy units (EO + PO) is 22 (claim 1). The esters are used in absorbent articles, such as diapers.

Superabsorbent hydrogels and polymers prepared using a presently claimed ester as a crosslinking agent contain a reduced amount of crosslinker residue and demonstrate improved absorption properties, see English language specification page 47, and compare *comparative* examples a. through c. to the *inventive* example d. in the table. Polymers prepared using a claimed ester F as a crosslinking agent also demonstrate improved absorbency results compared to a polymer prepared from a similar crosslinking agent wherein the trimethylolpropane is first ethoxylated, then propoxylated, and which is the *exact opposite* of

the claimed esters. See English language specification pages 47 and 48, and compare *comparative* examples 5a and 5b to *inventive* examples 4a and 4b, which *first* are *propoxylated*, *then* are *ethoxylated*, as claimed.

Claims 1-16, 19-21, and 23-30 stand rejected under 35 U.S.C. §103 as being obvious over Gartner et al. U.S. Patent No. 5,506,324 ('324) and over Nowakowsky et al. U.S. Patent No. 4,873,299 ('299). The examiner contends that the '324 and '299 patents teach ester compounds and processes that render the present ester compounds and processes obvious. Applicants traverse these rejections.

The '324 patent is directed to alkoxylated C₂₋₁₀polyhydric hydrocarbons. The polyhydric hydrocarbon can be trimethylolpropane. Generally, the alkylene oxide can be ethylene oxide, propylene oxide, or a mixture thereof, in a random or block arrangement. See '324 patent, column 4, lines 27-37.

However, the '324 patent fails to teach or suggest an alkoxylated trimethylolpropane *as presently claimed*. Outside of the general disclosure of the '324 patent with respect to alkoxylated trimethylolpropanes and (meth)acrylates thereof, the only specific teachings are in the examples of the '324 patent. In particular, Examples 1-38 of the '324 patent *each* utilize a commercial *ethoxylated* trimethylolpropanes, in particular the Sartomer products. These products also are discussed in the present specification at page 3, line 24 through page 4, line 9, which addresses the *disadvantages* of these compounds that are overcome by the presently claimed esters. The examples of the '324 patent fail to include *any* propylene oxide, let alone the type of ester recited in the present claims.

In particular, the present claims recite an ester (a) having a recited number of propylene oxide units *and* (b) a recited number of ethylene oxide units, in (c) a particularly *claimed* specific arrangement of PO and EO units, *all* as recited in claim 1. These claimed esters are neither taught nor suggested in the '324 patent.

As stated in the MPEP §2143,

"to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations."

All three of these criteria must be met, *without* the benefit of a hindsight reconstruction of the claims.

With further respect to establishing a case of *prima facie* obviousness, the MPEP §2143.01 states:

"The mere fact that references *can be* combined or *modified does not* render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Millis*, 916 F.2d 680, 16 USPQ2d (Fed Cir. 1990)" (emphasis added); and

"A statement that modifications of the prior art to meet the claimed invention would have been '*well within the ordinary skill of the art* at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art *is not sufficient* to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)." (emphasis added)

Furthermore, as set forth in the MPEP §2141.02:

"In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences *themselves* would have been obvious, but whether claimed invention *as a whole* would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed Cir. 1983); *Schenck v. Norton Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)."

For the reasons set forth below it is submitted that neither the '324 patent, nor the '299 patent, nor a combination thereof, teach or suggest either the modifications required to arrive at the presently claimed esters or *processes*, or all the claim limitations.

The '324 patent discloses no more than a general teaching of (meth)acrylates of an alkoxylated trimethylolpropane. Although the reference discloses that the alkylene oxide may be propylene oxide, ethylene oxide, or a mixture thereof, the '324 patent contains no teaching or suggestion of *any* block propoxylated-ethoxylated product having the presently claimed structure, i.e., trimethylolpropane first propoxylated with 4-6 PO units, then ethoxylated with 14-16 EO units.

In addition, the claimed methods of producing the claimed esters utilize an *excess* amount of (meth)acrylic acid, e.g., see claims 7 and 12, and allow the excess to remain

in the reaction product, e.g., see claims 8 and 9. This excess amount of (meth)acrylic acid ensures that *all* terminal hydroxyl groups of the alkoxylated trimethylolpropanes are consumed. The features of the present claims is neither taught nor suggested by the '324 patent.

The differences between the present claims and the '324 patent are nonobvious differences. Applicants specifically demonstrated the improvements provided by a claimed tri(meth)acrylate of the alkoxylated trimethylolpropane, i.e., having the specifically recited number of PO and EO units, and the specific PO-EO arrangement, as recited in the present claims. Applicants demonstrated that a compound having the *same* number of propylene oxide and ethylene oxide units, but *arranged differently*, provides different and *inferior* absorption results. See specification, pages 46-49. These new and unexpected results demonstrated by the present invention are derived from the presently claimed esters being (a) propoxylated first, then (b) ethoxylated, and (c) having the recited number of propoxy and ethoxy groups.

After reading the '324 patent, a person skilled in the art would not have been motivated to alkoxylated trimethylolpropane as presently claimed with any reasonable expectation of achieving the improved absorbency results provided by the presently claimed ester crosslinkers. The '324 patent is limited to a general teaching that propylene oxide, ethylene oxide, or mixtures thereof can be used to alkoxylate trimethylolpropane. However, no propoxylated examples are provided, and the '324 patent contains no disclosure suggesting the propoxylated trimethylolpropane would provide any benefits over the ethoxylated compounds, which are the only compounds provided in the '324 patent. The '324 patent also teaches a preference for ethylene oxide at column 4, line 41.

Most importantly, the '324 patent fails to teach or suggest (a) first propoxylating, then ethoxylating, with (b) a specific number of PO units and (c) a specific number of EO units. In addition, the '324 patent provides no incentive for a person skilled in the art to provide a propoxylated trimethylolpropane, as claimed; with any expectation of providing the new and unexpected results provided by the claimed esters.

In summary, for the reasons set forth above, it is submitted that the present claims would not have been obvious over the '324 patent. As set forth previously, MPEP §2143.01 requires that the '324 patent suggest the desirability of the modification to arrive at the present claim. The '324 patent provides no such desirability.

The '299 patent discloses crosslinking compounds at column 3, lines 4-25. Specifically, the '299 patent discloses numerous crosslinking agents and different classes of

crosslinking agents including "adducts of ethylene oxide and/or propylene oxide with trimethylolpropane which have been diesterified or triesterified with acrylic acid or methacrylic acid" (column 3, lines 15-18). The three examples of the '299 patent *each* disclose a crosslinker that is completely different from tri(meth)acrylate of an alkoxylated trimethylolpropane, i.e., N,N'-methylenebisacrylamide, butanediol divinylether, and divinylbenzene. These compounds are in no way structurally similar to the presently claimed esters, and, in fact, are not even esters.

Accordingly, the '299 patent teaches no more than the '324 patent, i.e., a general teaching that trimethylolpropane can be ethoxylated and/or propoxylated, then reacted with (meth)acrylic acid to provide a crosslinking agent. The '299 patent provides no incentive for a person skilled in the art to first propoxylate, then ethoxylate trimethylolpropane, using the specific number of EO and PO units as claimed, with any reasonable expectation of ultimately providing absorbent polymers having an improved absorbency profile. It is submitted, therefore, that the present claims would not have been obvious under 35 U.S.C. §103 over the '299 patent for the same reasons claims 1-16, 19-21, and 23-30 are patentable over the '324 patent.

Applicants also wish to respond to specific comments made by the examiner to support the rejection of the claims.

(A) For both of the '324 and '299 patents, the examiner states that "[T]he reference teaches the compositions as known." This is incorrect. The references merely generally teach an ethoxylated and/or propoxylated trimethylolpropane, but fail to direct a person skilled in the art to (a) trimethylolpropane (TMP) among a litany of other compounds, (b) the specific arrangement of PO blocks and EO blocks on the TMP, or (c) the specifically claimed number of PO and EO units, let alone *all* three of these recited claim features. The references therefore do not "teach the [claimed] compositions as known."

(B) The examiner states that '324 teaches that "particular segments [of the claimed compound] would be within the skill of an artisan desirous to promote certain features." It must be pointed out that a mere statement that a claimed invention is within the ordinary skill of the art is *insufficient* to establish a case of *prima facie* obviousness. See page 9, above.

(C) The examiner points to Example A at page 46 using only EO blocks. This is a *comparative* example outside the scope of the claims, as are Examples b and c at page 47.

Only Example d at page 47 is a claimed ester, and it includes the claimed number of PO and EO units, *properly* arranged. The inferiority of comparative Examples a-c vs. Example d is clearly shown in the table at page 47, lines 10-14. Note reduced extractables and crosslinker residue for inventive ester d.

(D) Furthermore, Example d on page 47 has the lowest VSI. The benefits of a low VSI are disclosed in the last paragraph of page 45 of the specification. Further, the examples in Table 3 on page 48 of the specification demonstrate the advantages of the claimed ester versus a different block EO/PO copolymer, namely the "EO first" analogue. The important AAP values are much higher for a claimed ester (i.e., 4a and 4b). Consequently, applicants demonstrated that it is not only important to provide a block copolymer, but also that it is important to provide a block copolymer of the claimed structure.

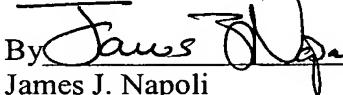
(E) With respect to the '299 patent, not only the examples are directed to entirely different crosslinkers. The '299 disclosure relating to alkoxylated trimethylolpropane is no more extensive than that of the '324 patent. Accordingly, the present claims distinguish over the '299 for the same reasons set forth above with respect to the '324 patent.

In summary, it is submitted that the present claims are patentable over the '324 and '299 patents, and that the rejections should be withdrawn, and that the present claims are in a form and condition for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

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